Leaving the nest: the interaction of parental income and family environment*

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Abstract

The influence of parental income on the choice of young adults to leave the parents' home is still an open question. This paper suggests a model in which either more parental income increases the independent child's consumption and encourages leaving (standard altruism) or increases more his consumption when co-residing (proximity altruism) and induces to stay. Besides, housing is a distinct non transferable good, and less housing consumption at the parents' induces to move out. The model is tested on the French Housing survey. Both poor and rich parents are more likely to see their children go than middle class parents and the quality of the nest matters. Lack of space in the parents' home encourages leaving, so do privacy costs linked to living with a step-parent. When the quality of the nest is controlled for, the effect of parental income is closer to standard altruism, especially for younger children. This suggests that parental housing decisions and income play an important role in the human capital accumulation of young adults.

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Key words: altruism; housing consumption; household formation

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1 Introduction

The time when the children leave the parental home and when one household splits into two coincides with the main life choices of early adulthood: higher education, work, and the start of a durable relationship with a partner. Those choices are linked to housing choices: depending on local supply of university education or employment, studying or working goes along with leaving the parents' home or not, and couples co-residing with their parents are rare. Whether the parents can help the child move out or provide long-term shelter is likely to have an influence on the youth's decisions. This article assesses the influence of parental income on the choice of young adults to co-reside, because its direction and importance are still open questions. While most find a small positive effect, compatible with altruistic parents helping their child to leave (see for instance Le Blanc and Wolff, 2003), others have found a negative effect. Some interpret it as egoistic parents bribing the child to stay home (Manacorda and Moretti, 2002). Aassve et al. (2002) mention the attraction of sharing in the family's resources. For Ermisch (1999, 2004) the *negative* is a sign of parental altruism. The present paper proposes a modified altruistic model and an empirical test. The model makes three natural assumptions to account for the special situation of leaving home. First the child does not pay for housing when he shares the parental home. Second, the parents do not adjust their housing consumption when the child leaves. Third the parents may be more altruistic when living with the child than when he has left. With these new features, the model predicts that, depending on parental constraints, the effect of their income on the child's co-residence can be positive or negative, that is more parental income may induce to stay or help move out. This could account for the mixed results of the previous literature. A second feature of the model is that more housing consumption at the parents' home encourage to stay. The paper argues that not taking into account the various dimensions of the parents' resources, and especially of housing quality, biases the measure of the effect of parental income. Actually the starting intuition was that if children are found to stay at their parents' longer than before, it might be linked not only to more frequent higher education, rising youth unemployment or delayed marriage, but also to parents' homes being more comfortable than in the past[1]. If housing conditions got better the 'pushing out' effect of parental

[1]For instance the number of rooms per person in France has gone up by 21% between 1984 and 2002 (Jacquot, 2003). On delayed departure, see Galland (2000) for France, or the references in DaVanzo and Kobrin Goldscheider (1990), for the USA.

income may be counteracted by the 'pulling in' effect of housing. All things being equal a child stays more if he feels 'at home'.

In order to test such a model both parents' and child's income need to be observed, as well as parents' housing consumption. We use a special feature of the last French Housing survey that relates parents and their children, both those at home and those who have previously left. The gross impact of the parents' income is found to be, as predicted by the theoretical model, non monotonous. It is negative for most children (more parental income induces to stay home), and positive for those whose parents are in the top 6% of income. Introducing parental housing environment in the econometric estimation yields two results. First the quality of the nest matters. For a given parental income level, children whose parents live in an apartment, rent in the private sector or provide fewer bedrooms per child are more likely to move out than those living in a house, renting in the public sector, or with more bedrooms. A home in a small town is also more likely to be left. Indirectly linked to shelter is the pushing out effect of the number of siblings, or of living with a step-parent, which suggests privacy costs. Second, when the quality of the nest is controlled for, the net effect of parental income is tilted towards a positive effect. When the children are aged 18 to 22, with their two parents living together, for the richest two-third (in terms of parental income) a higher parental income pushes them out. It is so for 45% only when the quality of the nest is not accounted for, because the effects of housing and parental income are counteracting each other. In other cases, for a child with a step-parent, or of low income parents, or for an older child, both a lower parental income and a 'bad nest' induce to move out. The effects of housing and parental income are reinforcing each other. In the end, children from both poor and rich parents are more likely to be independent.

Section 2 reviews the literature and points to some of the characteristics of housing consumption and of the child's life-cycle which prompts the assumptions of the theoretical model of section 3. The data and empirical specification are described in section 4. Section 5 tests the model. Section 6 concludes.

2 Literature Review and Housing Issues

Economists often analyze the relationship between parents and adult children in terms of altruism. Two separate entities are linked because formally the parents' utility is positively influenced by the child's, through an altruism parameter β measuring the marginal utility of the child's utility to his parents. It is as if the parents consumed

their child's utility. Then those who are effectively altruistic make monetary transfers to their child, and a small modification of the income distribution between parents and children leave their consumptions unchanged, because the parents adjust their transfer. This is standard altruism. In such a model, when the child wants to leave the nest, the higher the parents' income, the higher the parental transfer and the more the child leaves. The following assumption is usually made: the child chooses his housing consumption knowing that his parents are altruistic. Then the parents decide on a financial transfer that is an increasing function of their resources (Manacorda and Moretti, 2002, Becker et al., 2002)[2].

Applying this model to parents and adults children living together monetary transfers should be distinguished from housing services. Housing services (food and shelter) are usually considered part of parental duty, and monetary transfers are optional (and depend on parental altruism). Then part of the child's consumption is from his own choice, as he uses his own income and, possibly, the parental transfers. In such an altruistic model with two types of consumption, housing and other goods, the predictions are less straightforward than above. Le Blanc and Wolff (2003) insist that the effect of parental income on co-residence is ambiguous under general utility functions. Indeed they show that even in the case where the parents make a positive transfer to the independent child, the influence of their income can be null with Cobb Douglas functions. Ermisch and Di Salvo (1997) and Ermisch (1999, 2003), using a very similar altruistic model, predict that more parental income induces the child to stay, not to leave: compared with the model with one good, the effect is reversed.

If the theoretical effect of parental income on nest-leaving is not straightforward, empirically, the situation is also obscure. Manacorda and Moretti (2002) find that Italian parents who had an exogenous positive shock on their income were more likely to keep their children in the nest, and they suggest the parents are not altruistic and bribe the child to stay. In Aasve et al. (2002) higher parental resources delay the independence of young Americans. Ermisch (1999), with only a proxy for parental income, finds the same for Britain but the effect is small. He interprets it as compatible with altruism[3]. Le Blanc and Wolff (2003) relying on European panel data on parents'

[2]In a different model, where children search for a partner, a high parental income is a sign of a 'good catch', and increases the formation of partnership, hence also the rate of departure from home (Aasve et al., 2002).

[3]On the contrary, Ermisch (1996) and Ermisch and DiSalvo (1997) find a positive effect of their parental income proxy.

income evolution, find a positive if small elasticity: faced with an increase in their income, parents encourage their children to move out in all European countries, which, they say, is compatible with altruism[4]. With the exception of Ermisch (1999), none of these studies have detailed data on the parents' housing consumption, which, we argue, may be important.

Housing consumption has many dimensions that cannot be summarized by a single figure: for the same price a large house in the country does not offer the same service as a small apartment in town. Space and location are likely to be of primary importance, but privacy, economies of scale and mobility costs are also to be taken into account. Besides, as parents and children always starts as living together, the situation is not totally comparable to, say, two adults, one altruistic towards the other, deciding whether or not they live together. I now review the what is specific to this period of the life-cycle and how it prompts the model of section 3.

Privacy

Using an altruistic model implies that parents take into account their child's preferences, hence implicitly agree with the nest-leaving decisions. Compared to when the child was younger, an exogenous shock has happened: the child is older, he may have more income. Hence he can choose to live alone. Sharing the parents' home may be a cost for the adult child because of loss of privacy and parents' watch. On the positive side it brings companionship and the external pressure of rules may also benefit the child. For the parents the child's companionship and 'merit goods consumption' are weighted against lack of privacy[5]. It is important to assess privacy costs in order to know whether parents and adult children are better off co-residing or living separately, and whether they agree on the process. Manacorda and Moretti (2001) relying on direct survey questions offer evidence that Italian parents are happier if their children live with them and suggest parents want their children to stay. Sociologists have found

[4]Becker et al. (2002) find a positive feebly significant effect of father's experienced job insecurity on the decision of children to leave. According to Ghidoni (2002) the effect is positive in the north of Europe, negative in the south. Aassve et al. (2001) find no effect for men and a negative effect for women. The effect (of a proxy) is positive for Giannelli and Monfardini (2003). From American data (Whittington and Peters, 1996), the effect is negative for younger children, positive above 18 year old. Mc Elroy (1985) finds a negative effect of parents wage rate and a positive effect of their assets.

[5]McElroy (1985), Becker et al. (2002), Fogli (2000) only considers financial cost/benefit of co-residence. Ermisch and DiSalvo (1997), Rosenzweig and Wolpin (1993), Ghidoni (2002) mention privacy costs. Whittington and Peters (1996) indirectly address the question of merit goods.

that children living with a step-parent leave earlier[6]. This points to higher privacy costs among non-relatives. Using a special question of the French Housing survey, we found a significant negative effect of the presence of children on parental satisfaction of their housing conditions (for details see Laferrère and Bessière, 2003). The result is robust to the inclusion of home and parents' characteristics as controls. For a virtual family with characteristics at the sample mean the estimated probability to be satisfied is 0.83 when there is one child at home, it declines to 0.80 when there are two, and 0.76 when there are three[7]. Even if it is hard to conclude about general parental satisfaction about co-residence from a question concerning only housing satisfaction, the fact that children in the home make the parents dissatisfied does not support the idea that in general parents want to keep their adult children at home.

Children's privacy costs can be inferred from information on their housing consumption: that a child is willing to lose in housing quality or pay more in order to leave his parents' home is a sign of privacy cost to co-residence. When they leave the parental home children lose in total dwelling size, but the size per person is only slightly lower for recent movers by 2 square meters (Our computation from the French Housing survey, see Appendix 1). Other aspects of housing quality such as sanitary comfort, noise or neighborhood safety are lower for independent children than for those who co-reside. However as they move to more urban locations and smaller homes, independent children are found to pay 45% more per square meter than the parents of co-residing children (Appendix 1 and Laferrère and Bessière, 2003). It points to children paying a price for privacy. All in all nothing proves that parents and children disagree on housing arrangements[8]. Hence my model assumes altruistic parents who approve of their child's preferences.

Parents and child

As in most of the previous literature, my fist assumption is that the co-residing child does not pay for his housing consumption[9]. Actually, when they co-reside, in 60.9%

[6]See Aquilino (1991), Courgeau (2000), Murphy and Wang (1998) and references therein.

[7]This, as all figures in the text is computed from the French Housing survey (see Appendix 1).

[8]According to Villeneuve-Gokalp (1999), less than a third of parents dread their child's departure. After the child has left, for 40% of the parents the material conditions have changed for the better, and only for 10% have they changed for the worse.

[9]Ermisch and DiSalvo (1997), Rosenzweig and Wolpin (1993), Manacorda and Moretti (2002), Le Blanc and Wolff (2003). There is perfect income pooling when co-residence in Diaz and Guillo (2002) or Becker et al. (2002). In Börsch-Supan (1986) housing costs are shared between parents and

of the cases the parental income is more than 20 times the child's income (for 3.1% child's income is higher than parents'). Besides, child's net transfers to the parents is hardly ever documented, especially when the child is below 30.

My second assumption is that parental altruism can be higher when parents and child co-reside than when they live separately. The intuition is that the mere inter-relationship linked to sharing a home, or habit, because the child has grown up near the parents who have taken care of him since infancy, may induce a higher altruism parameter (or sharing rule) under co-residence than under independent living. Other reasons might be that parents want to monitor the child's behavior and are ready to reward him for it, or that the child has a higher bargaining power when present than absent.

Economies of scale

That independent children pay more per square meter than their parents is a sign of the economies of scale in housing consumption. They arise because housing is not a purely private good and because the price per person usually is a declining function of size[10]. A quantity H of housing services at price ρ provides a service $\rho H n^{\delta-1}$ to the n persons sharing the home, which is larger than $\rho H n^{-1}$ as soon as the economy of scale parameter δ is positive. Most theoretical studies of nest-leaving either do not address the issue (McElroy 1985) or assume housing is a pure public good and only one parent and one child (Ermisch and DiSalvo 1997, Ermisch 1999, 2003, Fogli 2000). Le Blanc and Wolff (2003) are an exception and add a parameter for the intensity of scale economies. In Rosenzweig and Wolpin (1993) an altruistic parent transfers to a child either in a monetary form or through co-residence. Because of scale economies, the marginal price of a transfer is higher when the child lives on his own and the parent transfer less in that case, but the model is not solved. With economies of scales a household of n persons behaves as a single person facing the modified price $n^{1-\delta}\rho$ which is less than $n\rho$. Then the more economies of scales in the parents' home the more expensive it is for the child to get the same amount of housing services outside. Adult children whose families benefit from a reduced price for their home, in particular those renting in the subsidized public sector where rents are set below market price, can be expected to leave home less easily than children of owner-occupiers or private sector tenants. Ceteris paribus, it is more costly to them to get the same quantity of

co-residing child.

[10]Nelson (1988) finds huge household economies of scale for shelter.

housing services outside their parents' home.

Mobility costs and the dynamic of nest-leaving

Some 13% of 18-20 year-old mention using more than one regular home, be they co-residing or independent. Between 21 and 24 years old, more than one in ten of co-residents and 3% of independent youths are in that case. Above 25, the proportions are lower. This suggests a dynamic process of home-leaving, a strong minority of youths experimenting two homes, especially when they are students. Moreover, among 18-29 co-residing children, 6.3% had an independent home in the past and came back (excluding those who had left as students). Among all 18-29 years old who departed at least once 8.6%[11] have come back at the time of the survey. Note that this rate is measured at the date of the survey. The rate of children who come back at least once over their lifetime is likely to be much higher[12].

That nest-leaving is an on-going process, with going and coming back is likely, along with important mobility and transaction costs, to prevent parents from adjusting their housing consumption after the child has left. Indeed the nest-leaving period has a *negative* influence on parental residential mobility (Debrand and Taffin, 2004). The third important assumption of the model of the next section is that the parents chose the level of the family housing consumption before the child was an adult and that they do not change at the time of his leaving[13].

To summarize, as the predictions of the available models of nest-leaving are unsatisfactory, and as the period of nest leaving is very peculiar, we looked more precisely at what is going on between parents and children at that period in their life cycle. Hence the three assumptions that, taken together, differ from previous models and will be formalized in the next section.

1. A co-residing child do not share the housing expenses.

2. Parents are more altruistic with a co-residing child than with an independent

[11]Number of back-to-nest divided by number of independent youths in the survey (weighted sample, strategy 1).

[12]From the National Longitudinal Survey of Youths, Aassve et al. (2002) find that 15% of young Americans return home at least once. Ermisch (1999) mentions a yearly rate of return of 2.7% from the British Household Panel Study. See also Villeneuve-Gokalp, 1997. DaVanzo and Goldscheider (1990) point to the home-base role of parental home.

[13]Ermisch and Di Salvo (1997), Le Blanc and Wolff (2003) assume the parents adjust their housing consumption after the child has moved out. In Börsch-Supan (1986) housing consumption is fixed.

child, all things equal.

3. Parents do not adjust their housing consumption during the child's leaving period.

3 A model of co-residence choice

This section suggests a static model of co-residence choice, offering predictions of the effect of parental income and housing environment on nest-leaving. Parents p and adult child k have respectively preferences U and V over two goods. Preferences are common knowledge in the family. One good is private consumption C_j, the other is housing service H_j, $(j = k, p)$, written as $Hn^{\delta-1}$, where n is the number of persons in the parents' home. Housing is an impure public good $(0 \leq \delta \leq 1)$. Parents have an income Y_p that is not influenced by the child's leaving home, and the child has an exogenous income Y_k. They maximize a collective utility function that is a weighted sum of individual preferences. The exogenous weight $\beta^m < 0.5$ can be seen as the parental altruism parameter. I assume $\beta^c \geq \beta^i$, i.e. altruism can be higher when parents and child co-reside $(m = c)$ than when they live separately $(m = i)$. The parents have the possibility to make a cash transfer T^m to their adult child.

When the child was young, the parents decided on housing consumption for their family of n co-residing persons. $H_p = \bar{H}$ is chosen at a time zero when the parents provided for the whole family. The parents may have in mind the future nest-leaving period, but this feature of their preferences is independent of the family income level. We return on this assumption below.

Between the zero and the adult child period, some exogenous shocks have taken place and the child's and parents' preferences (altruism parameter or tastes for privacy for instance) have changed. Then the adult child can either choose to co-reside, or live independently. As said above, the parents do not re-optimize their housing consumption, even if the child leaves.

Co-residence

If parents and adult child co-reside the parents decide on the family members' private consumption by maximizing the following weighted sum of the preferences.

$$\begin{aligned} \max_{C_p, C_k} & U(C_p, \bar{H}n^{\delta-1}) + \beta^c V(C_k, \bar{H}n^{\delta-1}) \\ & C_p + \rho_p \bar{H} = Y_p - T^c \\ \text{s.t.} \quad & C_k = Y_k + T^c \\ & T^c \geq 0 \end{aligned} \tag{1}$$

The child does not pay for shelter but finances his private consumption. Two cases have to be distinguished. If $T^c = 0$ the child's private consumption is from his own income ($C_k = Y_k$), and he benefits freely from the parent's housing. If $T^c > 0$ parents and child's budget constraint can be pooled, the parent is unconstrained (an effective altruist), and the first order conditions give C_p^c and C_k^c under co-residence.

Independence

If parents and adult child do not co-reside, the choice of H_k is added to the problem and the following function is maximized:

$$\begin{aligned} \max_{C_p,H_k,C_k} \; & U(C_p, \bar{H}(n-1)^{\delta-1}) + \beta^i V(C_k, H_k) \\ & C_p + \rho_p \bar{H} = Y_p - T^i \\ \text{s.t.} \quad & C_k + \rho_k H_k = T^i + Y_k \\ & T^i \geq 0 \end{aligned} \tag{2}$$

If $T^i > 0$, the first order conditions give C_p^i, C_k^i and H_k^i under independence. If $T^i = 0$, the parent is income constrained or β^i is not high enough for a transfer from parent to child, $C_p = Y_p - \bar{H}$ and the child chooses his consumption from the maximization of $V(C_k, H_k)$ under $C_k + \rho_k H_k = Y_k$.

To take the decision about living independently, the child compares his utility levels under co-residence V^c (with and without parental transfers T^c) and under independence V^i (with and without parental transfers T^i). He chooses independence if $V^i > V^c$.

Using Cobb-Douglas preferences allows to compute transfers and consumption levels in each case (at the cost of simplifying the choices between housing and other consumption), then the child's utility levels, and to determine the sign of the derivatives of $V^i - V^c$, hence the effect of Y_p, Y_k,β^c, β^i, n, δ and $\bar{H}$ on nest-leaving.

The computation of the model is in the Appendix 2 and the results for the three possible cases are summarized in table 1. The first line offers predictions in the unconstrained case where parents make cash transfers to the child: higher parental income or higher β^i triggers nest-leaving, which is in line with the intuitive effect of altruism[14]. This situation is likely to happen when parents are rich compared to the child. If, as I argue above, $\beta^c > \beta^i$, the parents can be unconstrained under co-residence, but be constrained after the child has left (second line) and there is a negative effect of parental income and of β^c. The child's private consumption is subsidized more when he co-resides than when he lives independently: he shares not only the house but more of

[14]Ermisch (1996,1999, 2003) or Le Blanc and Wolff (2003) do not find a positive effect, because they allow the parents to adjust their housing consumption after the child's departure.

Table 1. Model predictions: effect of parental income and housing on nest-leaving

Regimes of transfers	Parents' Income	Altruism parameter at home	Altruism parameter away	Number of siblings	Economies of scales	Housing consum-tion
Parents	Y_p	β^c	β^i	n	δ	$\bar{H}$
Standard altruism						
(1) never constrained						
$T^c > 0$ and $T^i > 0$	+	-	+	+	-	-
Proximity altruism						
(2) constrained when independent						
$T^c > 0$ and $T^i = 0$	-	-	0	+	-	-
No altruism						
(3) always constrained						
$T^c = 0$ and $T^i = 0$	0	0	0	+	-	-

other resources too[15]. Finally in the constrained case (3), parental income or altruism have no effect on the probability to leave, because the influence of parental wealth is entirely captured by their housing consumption level.

The model provides two channels for parental altruism. One is standard: helping the child to pay for his expenses when independent. The other is subsidizing the child's consumption when he co-resides more than would be the case under independence, because of a higher altruism in the former situation[16]. Thus the model allows for both a positive and a negative effect of parental income on nest-leaving depending on the means by which the parents express their altruism, when the child co-resides and when he lives independently. I call the positive effect 'standard altruism' and the negative effect 'proximity altruism'. The first could be labeled emancipating altruism, the second protective altruism, but it is important to remember than in each case the altruistic parents takes into account their child's utility.

[15]If $\beta^c = \beta^i$, a parent who is unconstrained under co-residence would also be unconstrained when the child is independent and case 2 would not obtain (as in Ermisch, 1996, 2003, or Le Blanc and Wolff, 2002). Then $T^i > 0$ and $T_c = 0$, and the prediction would be similar to case 1.

[16]Even if the model assumes that the parents react to an increase in the child's income and make him pay more for his private consumption (the usual income pooling feature of altruism), it indirectly captures the possibility for the child's to 'consume' more if co-residing, that is for instance to save before leaving home.

A purpose of this paper is also the test of an independent effect of housing consumption. In the model, the various characteristics of housing are subsumed into two parameters: the number of people in the house n and the intensity of scale economies δ. The more people, the more one is induced to leave, a crowding or privacy effect. As for the parameter δ, the higher it is, the more scale economies in parental housing service production, the cheapest it is to consume housing while co-residing, the higher the gain in sharing, the less likely the child is to leave. More housing consumption at home deters from departing in all cases. Another related effect is housing price: the higher the price for the child, the less likely he is to leave. Note that the influence of housing variables is always the same. A better or a cheaper parental home induces to stay. Hence in the standard altruism case, the positive parental income effect, that pushes the child out, is dampened by a housing effect that pulls him in, and the net effect may be null. On the contrary when parents are proximity altruists, the negative parental income effect, which keeps the child at home, reinforces the housing quality effect. As is usual, the model reserves the term altruism for parental income transfers, as if home sharing was a basic obligation for parents. However, compared to other models, providing for child's consumption at home is altruistic.

4 Empirical specification and data

The theoretical model suggests that the child's differences in utility levels while living independently or co-residing can be written as:

$$V^i - V^c = f(Y_p, Y_k, \bar{H}, \beta^c, \beta^i, n, \delta, \rho_k).$$

I test an empirical model with all those variables, where the dependent variable is a dummy equals to 1 if the child is independent and 0 if he co-resides. I use linear probability models [17]. As the theory showed that parental income Y_p can have a positive, negative or nul influence it has to be introduced in a flexible way. To choose the functional form of Y_p, I simulate the theoretical model for plausible values of the parameters in the Cobb-Douglas case ($\gamma = .7$, $\alpha = .6$, $\beta^i = .2$, $\beta^c = .5$, $Y_k = €2,000$ and $\bar{H} = .3Y_p$). Figure 1 plots the resulting difference $V^i - V^c$ at each level of parental income (from 4 to 28 thousand euros). The slope is nil (no altruism) or negative (proximity altruism) for low parental income level, and positive (standard altruism)

[17] Logit models yield the same qualitative results (Laferrère and Bessière, 2003).

for high parental income level. It suggests the use of a polynomial in income. After testing the parental income effect non parametrically on the data[18], I decided on a fifth degree polynomial in parental income.

The preference parameters β^c and β^i are unknown. Child's sex and age, age of parents, a dummy for having an immigrant parent (born abroad, and non French by birth) and family type (whether the child has or had his two parents at home, or one single parent, or a parent and a step-parent) are used as proxies. n will be the number of siblings prior to the child's departure. $\bar{H}$ is introduced as a vector of housing quality variables: whether the dwelling is a house or an apartment, number of bedrooms per child and location (city size). Number of bedrooms per child and whether the parents are renters in the public sector also proxy for δ the intensity of the economies of scales in the parents' home. Note that family type is likely to be both a proxy for 'home quality' through privacy costs and to influence altruism. The housing price ρ_k faced by the child is not observed for independent children (because of the data) nor for co-residing children (because where they will settle is not known). Most studies do not address the child's location choice or implicitly assume that he lives close to the parents and faces the same housing market (see for instance Haurin et al. 1993). I do not address location choice here, but housing prices are proxied by the size of the city where the *parents* live. I show below that as children tend to move to urban location, it captures both parental neighborhood quality and the price the children face in large cities.

An important feature of the model is that parental income Y_p and parental housing consumption $\bar{H}$ are introduced separately. Indeed we argue that not introducing housing characteristics would bias the measure of the effect of parental income (see Appendix 3). Identification of income and housing effects relies on the non-transferability of housing. The assumption of fixed, non-fungible, parental housing means that the parents do not sell the house (or move) to consume more, nor downsize to help the child move out. While the parents can transfer some of their cash income to the child, they cannot extract housing equity and transfer the part of their consumption that is embedded in the house. In other words, we assume housing is chosen by the parents

[18] Using dummies for €1,000 income intervals or polynomial spline functions with knots at deciles. I use parental income by equivalent adults (estimated prior to the child's departure). As the date of nest-leaving is not known, children were assumed to leave by birth order. Using parental income without deflating by an equivalence scale gives the same qualitative results (Laferrère and Bessière, 2003).

long before the child's decision to move out and is influenced by the parents' permanent income, while cash transfers to the child react to their current income. Indeed the correlation between current parental income and housing expenses is not perfect: it is 0.44 for tenants of the private sector and 0.24 for those in public housing.

It could be argued that the parents' housing choices are not fully exogenous to the child's nest-leaving. Parents wanting the child to move out may have deliberately chosen an ill suited dwelling, and conversely[19]. However we show in Appendix 3 that the fact that the parents' taste for co-residence influences their housing choice does not preclude identification of both income and housing effects, providing the influence of the parents's taste for co-residence on their housing choices is independent of their income.

Longitudinal household panel data are well adapted to the study of life-cycle transitions because they provide information on how both the child's and the parents' characteristics evolve over time. However the samples are often small, and precise housing questions are but a few. Besides, endogenous attrition is important in panel surveys, since nest-leaving is linked to a higher probability for the new household to be missing from the data. Armed only with cross section data, the researcher has to develop second-best strategies. This is what is done here, thanks to extra questions of the last French Housing survey which relates parents and their independent children.

We create three different samples from the same dataset and make use mostly of the third. The first sample is straightforward: it comprise all young adults (aged 18-29) in the survey, whether co-residing with their parents or not. Nothing is known about the parents nor the parents' home of independent children. The second sample is a sub-sample of the first, comprising only co-residing youths and those who have recently left their parents. It provides some information on the parent's home, but not parental income. The third and main strategy relies on the fact that all parents were asked whether they had children living outside their household. For each such child, sex, age, education level, links to parents and whether he lives with a partner is known. Thus a third individual level sample can be created, comprising co-residing and independent children of a representative sample of parents. Hence, parental housing and income are perfectly known for the third sample. The three samples are described and discussed in details in the data appendix.

[19]But a house unsuitable for a 20 years old may be perfect to greet future grand-children: the time horizon of the family decision is likely to play a role.

5 Empirical tests

Even if it is not the focus of this paper, I start by checking the influence of child's sex, age and income on co-residence to ascertain that sample 1 and 3 give similar results, and results in line with other studies. Comparing 18-29 years old co-residing and living alone (Table 2, sample 1) I find a strong effect of age and that females are more prone to leave their parents than males. Privacy costs are likely to rise with age, and they are more important for young women than for young men since they marry earlier[20]. There is a strong positive effect of the child's income. Sample 3 gives the same results, with a larger influence of child's income (Table 2, sample 3). As the income is a predicted income in this sample (see Appendix 1), it is probably more akin to permanent income, hence the increased intensity of the effect[21]. These results are in line with what is found elsewhere and are robust to adding the parents' income to which I now turn (Table 3 model 1).

5.1 The interplay of parental income and nest characteristics

The model assumes that parental income is exogenous, that is parents' labor force participation is not affected by their child leaving home[22]. Parental income is found to affect departure significantly, but its influence is small compared to the child's and non linear. The thin full line of Fig. 2 plots the estimated independence rate by parental income level for a child whose other characteristics are at the sample means. The main quantiles of parental income are also indicated. For a vast majority of families the slope is negative. Up to the third quartile of income the higher the income the more the child co-resides. For richer parents income has no significant effect on the child's departure. The slope becomes positive only for the children with the richest 15% of

[20] Because of time constraint on their fertility among other reasons. The effect remains when controlling for living with a partner, but this variable is not used since it is endogenous.

[21] Using predicted income for the child limits possible endogeneity problems.

[22] There is no evidence that the activity rate of mothers increases as age of last teen age or adult child rises (I thank Guy Laroque for his computation of the French Labor Force surveys). Retirement decisions could be influenced by the number of co-residing children, but they are not very flexible in France and take place later (table A1). However income from welfare benefits is likely to be reduced by the child's departure. Such endogeneity would underestimate the positive effect of parental income, and overstate its negative effect. I checked such bias by separating parental labor income from other types of income. As the qualitative results are unchanged I stick to total income. Housing subsidies are excluded from parental income.

parents. Defining a 'significant' effect as one where €1000 more of parental income increase independence by more than 0.25 percentage point, a positive effect is found only for the very top percentiles (7% of the children) of parental income. Taken at face value it would prove that most parents do not help their child move out and that three quarters of children stay home all the more that they can benefit from more consumption through a higher parental income.

I argued above that parental help to the child can take the form of providing a home for co-residence, and that housing consumption of parents was fixed and non transferable to independent children, whereas monetary income is. In that situation the measure of the effect of parental income is biased if housing consumption is not taken into account (see Appendix 3). Model 2 of Table 3 takes into account housing quality.

The effects of the housing variables are the following. Compared to private sector tenants' or owner-occupiers', children whose parents are tenants in the public rental sector are the most likely to co-reside[23]. For them the economies of scale are at their highest as the rent is subsidized and it is relatively more costly to leave. Conversely, the private sector tenants' children are the most likely to be independent, more than owner-occupiers' children[24]. The location of the dwelling is very important: compared to a baseline estimated probability (parental income set to the median, other characteristics at sample means) to be independent of 56%, a child whose parents live in a small town has an estimated probability of 58.7% , the estimated rate is 54.6% for children whose parents live in large cities, above 200,000 inhabitants, and it is only 45.5% in the Paris area (table 6, panel 1, all children). The interpretation in terms of housing consumption is that cities provide education and job opportunities that can be seen as public goods for the young adults. Thus a 'bad quality' that children are fleeing from is the lack of those public goods in the neighborhood[25]. Those goods translate into higher land cost, hence a second reinforcing effect: since housing prices increase with urbanization, children are all the more likely to stay home that their parents

[23]Ermisch (1999) finds the same for Britain.

[24]Owner-occupiers and public housing renters are less likely to move when their children leave (the former face mobility costs and many of the latter would not get another subsidized home since they are likely to be no more eligible), and gain in other consumption.

[25]Martinez-Granado and Ruiz-Castillo (2002) find that living in a city *increases* the propensity to be independent because they only look at where the child lives, that is either his home or his parents. My interpretation is the opposite: children stay in or move to cities.

live in a high price area[26]. Space is also important: the more rooms, the more one stays. Dividing by two the number of bedrooms per child increases co-residence by 2.5 percentage points[27]. An apartment is more likely to have been left than a house. It may bring less privacy. Having more than one sibling increases the probability to leave. This suggests both space constraint and privacy costs. An alternative to a vector of housing characteristics is to introduce parental housing expenses (as estimated from a hedonic model, see Appendix 1). A hundred euros increase in parental rent raises the hazard to co-reside by 1.8 percentage points (Table A2). Introducing all the other housing characteristics, the effect of total expenses is still very significant, but smaller (0.6 point), and the other housing characteristics keep their own effect. It proves that housing expenses do not capture all the dimensions of housing consumption. Since I am interested in the various effects of housing characteristics, I drop the housing expense variables in this paper[28].

Once housing characteristics are introduced into the model, the profile of the parental income effect is changed (Fig. 2 full bold line). Up to the median, the effect is still negative but its intensity is lower. Compared to a baseline independence rate of 56% at the median parental income, the rate was 7.7 points higher for a child whose parents are at the lower decile if housing was not taken into account, but only 4.2 points higher when it is (table 6, panel 1). Put differently, when the effect of income is of 4.2, the effect of housing is of 3.5 (7.7 - 4.2), i.e. of the same order of magnitude. For children of low income parents both a bad home and a lower income are an inducement to leave. Above the median parental income, as income grows, for roughly a third of the parents, the effect of their income is nil; finally for the top 12% of parental income the effect is positive (€1000 more of parental income increase independence by more than 0.25 percentage point). Those parents can influence the child's departure by a cash transfer[29]. However the intensity of the positive effect remains very small: a child

[26]Ermisch (1999) finds that higher regional relative prices retard home leaving.

[27]Estimated parameter times the average number of bedrooms per child divided by two. Using total number of rooms instead of number of bedrooms per child yields the same qualitative results. Sociological studies have shown the importance of the bedroom as 'private territory' for the young adult (Ramos, 2002). Larger homes go along with more scale economies: this would reinforce the effect.

[28]Besides, parental housing characteristics are likely to reflect idiosyncratic tastes of families, linked to unobserved heterogeneity, hence to correct for the possible endogeneity of parents' housing choices. The parental income effect is left unchanged (see table A2 in the Appendix).

[29]The transfers are not observed. Their existence is only inferred from the sign of the parental income effect, as predicted by the theoretical model.

with a parent at the d9 level of income (upper decile limit) has 1.8 percentage points more chance to be independent than a child whose parent is at q3 (third quartile). Not including the housing variables, a child with parents at d10 had less (0.1 percentage point) chance to be independent than a child at q3 because the 1.8 pushing out income influence was overridden by a pulling in housing effect of 1.9. Not including the housing variables translated into on average 7% of parents of 18-29 youths helping the children to be independent; including them doubles the proportion and 12% of parents help the child move out. Therefore, ignoring housing effects biased the results against the standard altruistic prediction. As 'good' homes are likely to be those of richer parents, this points to the push/pull effect predicted by the theory: a high income (mildly) pushes the children out of the home, but better dwellings pull them back home. As for the negative effect of income for children of the bottom half of the parental income distribution, which is less intense once housing is taken into account, it is compatible either with proximity altruism or with parents bribing the children to stay (the 'Italian' non altruistic interpretation, see Manacorda et al. 2002 or Becker et al. 2002). But I interpret the fact that the income effect is positive for the less constrained of parents as ruling out a general bribing.

The robustness of the results is checked by restricting the sample to parents who have not moved in the last 5 years, out of a concern that parents' housing conditions were not exactly those the out-of-nest child had met with if the parents had moved since the child's departure. The results are unchanged (table 4, model 1 and 2, and Fig. 3, dotted lines, non mobile)[30].

Note that the theory predicted that for low-income parents the effect of their income would be nil, for a given level of altruism. We find it negative: it is compatible with strong proximity altruism among low-income parents. We find a null effect of parental income at the frontier between the positive and the negative effect. It could be that proximity altruism and standard altruism are counteracting each other, if the distribution of the βs preference parameters vary within the population.

[30]I also separated parental income into labor and non labor income, or excluded child's income from the model: the qualitative results are the same but standard altruism is always more frequent than in the basic specification. The effect of the housing variables are unchanged. They are also the same on non-trimmed sample 3.

5.2 Privacy, altruism and step-parents

Looking at the effect of family-type allows to get more insight into privacy costs or the strength of altruism. Either the child has or had his two parents at home (67% of the children), or he has only one single parent (lone father, 2%, or lone mother, 17%), or he has a parent and a step-parent (step-father, 9% or step-mother, 5%). Family type has a strong influence on co-residence. Compared to having both parents, living with a step-father increases the probability to live independently by 13 to 15 percentage points, living with a step-mother by 24 to 25 (Tables 3 and 4). This can be interpreted as privacy costs for parents and child. Besides there might be less services flowing to children living in 'blended' families[31]. Children of a single mother are also more likely to have left but the effect is much lower. As mentioned above, the step-parent effect may be biased upward (especially the step-mother effect) because, unknown to the researcher, some of those adult children who have left may be living with their other parent (especially their mother) or may have never lived in the interviewed dwelling. However a huge literature confirms our result[32]. In a family fixed-effect model (last column of table 2), the step-parent variables are still very significant. The family type effects are the same on a sub-sample of non mobile parents (tables 2 and 4).

Another interpretation is that altruism is different when two parents are involved, by the sheer number of parents (two is more than one) or because the links are tighter than after a divorce or a re-marriage[33]. In the next specification (model 3 in table 3) all effects are allowed to vary with family type (all variables are interacted with the three family types).

The results for parental income effect are now on Figure 4. It shows that for two-parent or single parent families, the overall effect is of the same convex profile

[31] See Case et al. (2000), for evidence on food consumption.

[32] See for instance Aquilino (1991). Another source for a bias could be that the child has unobserved resources from the absent parent that help him to leave. However in case of children co-residing with a step-parent only 2% of households mention receiving alimony, and 3.5% of single parents do so. Alimony cannot be individualized in the data and is added to the parental income. In the 1980's frequent contact with the non-custodial parent was maintained in only 17% of U.S. families (Furstenberg et al., 1983).

[33] However each altruistic parent can free-ride on the other's altruism (Laferrère and Wolff, 2004). This could happen after a divorce. Strictly speaking I do not measure altruism but only whether different types of parents are more or less constrained in expressing it. In any cases altruism has no moral connotation: it only measures the intensity of parental deference to the child's utility (Pollak, 2003).

as above. For children with a step-parent the profile is either downward (as parental income increases the child is less likely to have left), or flat (income has no influence). There is no sign of standard altruism towards independent children in step-families. The fact that a negative effect of parental income is more prevalent in step-families is a second reason to reject the interpretation in terms of parents bribing the child to stay: such a bribe would be unlikely to happen more in step-families than in two-parents families.

Figure 4 also shows the 95% confidence intervals of the independence rates. The difference between family types are clear but the effect of parental income should not be outstretched. However one important point is that the graphs have a minimum for children of two or single parent. It is at €13,028 ± 2,389 for children with two parents and €14,282 ± 3,231 for those with a single parent. The standard errors for those minima (computed for the variance covariance matrix of the parameters α_i of the income polynomial and the vector $(\sum i(i-1)\alpha_i \hat{y}^{i-2})^{-1}[iy^{i-1}]$ at the minimum $\hat{y}$) are such that the differences between children with two-parents and those with a single parent is not significant. Translated into percentiles of parental income, for children with their two-parents, the slope becomes positive (with the same .25 percentage point significance cutoff as above) for those with parents in the top 15%, whereas for a child with a single parent it is so for the top 10 percent only, because parental income is lower for them than in two parents families. In case of a child with a single parent the constraint is likely to stem from low parental resources when it could stem from low altruism in case of a blended family. For children of single parents, what I call proximity altruism is crucial to make children stay: a child whose parents are at the lowest decile (d1) has an independence rate of 61.9% compared to 51.8% for parents at q3, some ten points more (Table 6). For them getting more consumption at home induces staying. Note that the negative slope of parental income is more steep for children of single parents than for those with step-parents: the d1-q3 difference is only of 5.9 percentage points for the latter. It could be interpreted as proximity altruism being higher for the former.

The influence of the housing variables varies slightly with the family situation (table 3, model 3). The public housing effect is felt only for two-parent and single parent families. The number of bedrooms per child seems more crucial in step or single parent families, where the effect more than doubles. The influence of the number of siblings is rather less in step-families. On the sub-sample of parents who have not moved in the past five years, the parental income effect is flat for children of a step-parent, when

housing variables are controlled for. It could mean that the only transfer they get is through housing consumption. The profiles are unchanged for children of two parents and of single parents (table 4).

As a means to check the stability of the results, we use sub-sample 2 of children who have recently left their parents and for whom some of the parent's home characteristics are known. The results are in table 5 and surprisingly consistent with sample 3. Child's age, income and sex effects are the same. Parental income or family type are unknown so cannot be used. As far as housing characteristics are concerned, the number of room has a very similar effect: more room induces to stay and more overcrowding in terms of number of persons induces to leave. City size plays in a different way, except for the negative effect of Paris, found in both samples.

5.3 Altruism and child's age

It seems likely that parental altruism and parents' and child's tastes for privacy may differ with the child's age. Besides, the child's income, which determines the transfer regime, increases with age. Indeed the mean income of a child who is less than 23 is €3,300, it is €8,700 when the child is above 22 and below 25 and it is €13,000 when he is older. To test the effect, all variables are now interacted with child's age. This is done only for children with their two parents. Three age groups are considered: 18-22, 23-25 and 26-29. In each case two specifications are as before tested, without and with the housing variables. The results are summarized in table 6 (panel 2) and Fig. 5a, 5b and 5c. The table presents, in each case, the estimated baseline independence rate and how it varies with parental income, the number of bedrooms per child and the location of the parents' home. It also provides an estimation of the percentage of children whose parents can be said to be 'standard altruists' (their income helps their children be independent), or 'altruistic by proximity' (the less income the more the child leaves[34]). The results are the following:

(1) The influence of parental income is felt at all ages but differs. It has a positive effect on independence for the youngest (18-22): increasing parental income from q1 to q3 adds 4.3 points to the estimated independence rate. The effect is negative for older children, the same increase in income decreases independence rate by 3.5 points for 23-25 and by 3.3 for 26-29.

[34]As above, a €1,000 increase in parental annual income raises the probability to leave or to stay by more than 0.25 percentage points.

(2) Standard altruism declines as the child ages and disappears when the child is above 26 years old. When the child is below 22 the effect of parental income is positive for children in the top two-third of the parental income distribution[35]. For 23-25 years old altruism is less frequent, the effect is positive for only the top 20% of parental income, and its intensity is lower. For children above 25, standard altruism is absent. If the reader remembers that standard altruism means income sharing between parents and an *independent* child, it makes sense that it should decline as the child ages[36].

(3) As for proximity altruism, it is barely visible for 18-22 year-old. When the child is aged 23 to 25, proximity altruism becomes more important for the bottom 60% of the parental income distribution. Above 25 a large majority of children are more likely to co-reside when the parents are richer, but the intensity of the impact is low and declining as income rises. As he gets older, a child stays only when he can benefit from enough consumption from his parents and the parents seem to finance less of the co-residing child's consumption as he ages.

The importance of parental income for younger adults is likely to be linked to the choice to go into higher education and to where this education is got. If it is provided nearby, studying does not imply moving out of the parental home. If not, the result points to the importance of family income to help the child leaving home to study. In other words, the child's choice is more than just living independently: it is probably between education and immediate work, and between education nearby and education further away. Children who are students cannot be isolated in sample 3 so I cannot probe further into education choices[37].

(4) Less bedrooms per child becomes an inducement to leave only above the age of 22. The taste for privacy in terms of private space may be increasing with age. The effect of geography on the contrary is important at an early age, probably as children need to leave to study. It is less important after 25, when only Parisians are found to be more likely to co-reside, which is probably linked to high housing prices in the Paris region. The pulling in effect of parents living in public housing is present only for younger children. This suggests some kind of mobility trap for the public housing children which could be linked to the high rate of youth unemployment in

[35]Distributions are computed by child age.

[36]When observed living independently at, say, 27 years old, a child may well have left at 21, with the help of the parents. What is found is that those who have left by the age of 27 do not have higher income parents than those who have not, cet.par..

[37]Laferrère and le Blanc (2003) concentrate on students' co-residence choices.

public housing areas.

(5) Not controlling for housing characteristics biases the results against standard altruism, and towards proximity altruism at all ages. A large part of parental transfers are in the form of providing shelter to co-residing children.

6 Conclusion

Starting by observing that the effect of parental income on nest-leaving was still an unsettled theoretical and empirical issue, this paper suggests some reasons for the conflicting results of previous studies. The effect of parental income is non linear and can be either negative or positive. This is predicted by a theoretical model where parents can be either 'standard altruists', helping the child to leave by making a cash transfer (hence the positive effect of their income), or they can be just 'proximity altruists', offering food and shelter to their children (hence the negative effect of their income on nest-leaving). The models also predicts that a higher quality, in a broad sense, or a lower price of the housing services offered by the parents induce the child to co-reside. Hence the 'push out/pull in' effect of more parental income and housing in case of standard altruism and the 'pull in' effect of both more parental income and housing in case of proximity altruism.

Analysis from the French Housing survey does not reject the model. If the parental home is well situated, near supply of jobs and higher education, if it offers more bedrooms per child, if it is less crowded, children stay more. If parental housing consumption is subsidized, the child is also less likely to leave. Taking housing characteristics into account, the effect of parental income is either counteracted, in case of standard altruism, or reinforced, in case of proximity altruism. The magnitude of housing effects seems larger than those of parental income. For instance, for a child living with his two parents, having parents living in the Paris region decreases independence by 11 percentage points, dividing by two the number of bedrooms per child increases it by 1.5 percentage points, compared to an increase of 0.4 percentage points when parents' income is increased by €5,600 (i.e. goes from the median to q3 of the distribution) or an increase of 2.2 point when parental income is increased by another €7,600 (i.e. goes from q3 to the top decile of the distribution). Sharing a home involves more than purely material gains or costs. Privacy costs of co-residence are important for children living with a step-parent, who are more likely to leave. Depending on family type the effect of parental income varies, with standard altruism being more frequent in two-parents

families than for single parents who are probably more income constrained, and being absent for step-parents. I also find that standard altruism declines as the child ages, while proximity altruism first increases then also declines in intensity.

It is important to look precisely at family ties and child's age to understand what happens within families, and to go beyond monetary income to understand housing consumption and the two types of altruism, because parental housing is non transferable. What is found is compatible with rich altruistic parents helping their children move out. This is the case for two-third of young adults in two-parent families, where parental income has a positive effect. In blended families, where on the whole children stay less, or for older children, a higher parental income induces the child to stay, not to leave. Then low income and bad housing conditions push the children out. In the end, both privileged and under-privileged children may be leaving more or earlier than middle class children. Further research should address the welfare consequences of an early or a late departure for the child, and probe into the precise links between parental housing and income, family type, and child's decision of higher education or work.

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Appendix 1: Testing strategies from the 2002 French National Housing survey

The last French Housing survey was conducted between December 2001 and March 2002 on a national representative sample of 32,156 households.

1. A first 'natural ' strategy would be to create one observation for each young adult, aged 18-29, whether co-residing with his parents or not. This sample of 5,327 co-resident and 6,898 independent youths can be used to study their housing conditions and to assess the individual determinants of leaving home. However nothing is known about the parents nor the parents' home of independent children. If $I^\star$ is the latent variable that determine living independently, X_p, H_p parental characteristics and parental housing variables, and X_k, H_k child's characteristics and housing variables, this strategy 1 (read horizontally on Fig. A1) allows to test models such as $I^\star = f_1(X_k)$. As we are interested in the parental influence on nest leaving, we turn to two other strategies.

2. For a sub-sample of recently settled independent children, information was collected on characteristics of the last dwelling (H_p). Reducing the sample to the 1,916 who had been living in France with their parents and comparing them to those the 5,327 who are still at home allows to shed some light on the effect of housing conditions on nest-leaving (sample 2, add to left block of children at home the right vertical block on Fig. A1). With the same notations, sample 2 allows to test models such as $I^\star = f_2(H_p, X_k)$.

3. The third and main strategy relies on the fact that all parents were asked whether they had children living outside their household. For each such child, sex, age, education level, links to parents and whether he lives with a partner is known. Thus a third individual level sample can be created, comprising 5,327 co-residing and 8,080 independent children (of either the same parents or of other parents in the sample who have no more children at home)[38]. With the same notations, strategy 3 permits to test models such as $I^\star = f_3(X_p, H_p, X_k)$.

   The fist sample is representative of the 18-29 non institutionalized population. The third sample should be of similar size as it represents the 18-29 children of a representative sample of parents. It is actually larger. Besides the 3.48% children

[38]Independent children whose parents could not provide age or education level or who lived more than 500 km away from non-French parents were left aside.

who live in institutions (according to the 1999 census) and are present in strategy 3, some children are declared both by their father and their mother if the parents live separately. A non custodial father would declare he has a daughter living outside. This daughter could be living with her mother or be independent but never have lived in her father's home. This is clear on the graphs comparing the proportion of independent young adults at each age. It goes from 11% at 18 years old to 73% at 25, 90% at 30 (Fig. A2, sample 1). It levels around 96% after 37 years old. The graph for sample 3 (Fig. A2, non-trimmed sample 3, dotted line) is above that of sample 1, especially at younger ages, because of this double counting. Fortunately the data allow to define the precise relationship of the child to the parents: either he has (or he left) his two parents at home, or only one single parent, or a parent and a step-parent. Breaking the sample by family type, the rate of independent living is much higher for children with a step-parent, or to a lesser extent for children of a single parent. While this has been found repeatedly in previous studies[39], the extent of the effect is overstated here. The survey does not provide any clue to extract among those some 1,182 (8,080-6,898) 'extra' children those who had actually lived in the interviewed household and really left the nest. However most of them are likely to have been declared by fathers, so I eliminate from the sample 597 independent children of non widower single fathers and 257 independent children of a divorced father living with a partner whom he has not remarried, assuming custody was not likely to be the father's in those cases. This leaves a sample of 7,226 independent children. See the left vertical block of Fig. 1. On the trimmed sample the age rate of independent living is much closer to that of strategy 1 (Fig. A2, Sample 3). To check the robustness of the results to the sample definition, all tests below are duplicated on various subsamples. Firstly including the 597+257 outside children eliminated above, secondly excluding those whose parents moved during the last 5 years, assuming that if the parents did not move, the child is more likely to have lived in the dwelling.

Estimation of housing expenses

Parental housing expenses are either the observed rents as declared in the survey, or imputed rents for owner-occupiers or public housing tenants. Rents were imputed from households characteristics as follows. Hedonic regressions were run on all private sector

[39]See footnote 6.

renters in the survey, separately for apartments and houses. They relate the rent to house and household's characteristics. Variables include dwelling characteristics: area in square meters, number of rooms, area par room, a dummy for average room being less than 15 m^2, presence of a garage, of an outside car-park, comfort, day noise, night noise, safety, age, and, for apartments, floor level, presence of a lift, number of apartments in the building. Dummies for detailed location (city size and region) were also introduced, along with some household's characteristics such as number of children, satisfaction and dissatisfaction about housing conditions, length of tenure and its square.

Sample 3: imputing the independent child's income

From observations on all independent youths aged 18-29 in the survey an equation is estimated relating income to age, partnership, sex and education level ($R^2 = 0.2523$). Then the estimated parameters are used to impute the income of independent youths whose parents were interviewed but who were not themselves (sample 3).

Appendix 2: The Cobb-Douglas case

In the Cobb-Douglas case, the parents maximize, when co-residing with their young child:

$$\gamma_y lnC_p + (1-\gamma_y) lnH_p$$

under:

$$C_p + \rho H_p - Y_p - Y_k = 0$$

There is no use in introducing an altruism parameter because the child income is so low that the parents are providing for food and shelter. Then $H_p = \frac{1-\gamma_y}{\rho}(Y_p + Y_k)$ which we assume is equal to $\bar{H} = \frac{1-\gamma_y}{\rho} Y_p$. With Cobb-Douglas the public good aspect of housing is not taken into account, and plugs in rather artificially in the end.

Some years later, the child is an adult, and when he is still co-residing, the parents maximize:

$$\gamma lnC_p + \phi lnH_p + \beta^c[\alpha lnC_k + (1-\alpha) lnH_p]$$

under:

$$C_p + T^c = \bar{Y}_p,$$

$$C_k = Y_k + T^c,$$

$$T^c \geq 0$$

with $\beta^c + \gamma + \phi = 1$, $H_p = \bar{H}$, fixed, and $\bar{Y}_p = Y_p - \rho\bar{H}$. T^c is the extra private consumption that the child gets if his parents are unconstrained, i.e. their transfer. In the case of $T^c > 0$, the two BC can be pooled and the FOC are:

$$\frac{\gamma}{C_p} = \frac{\beta^c \alpha}{C_k}$$

from them and the budget constraint we deduce:

$$C_k^c = \frac{\beta^c \alpha}{\gamma + \beta^c \alpha}(\bar{Y}_p + Y_k),$$

and:

$$T^c = \frac{\beta^c \alpha}{\gamma + \beta^c \alpha}\bar{Y}_p - \frac{\gamma}{\gamma + \beta^c \alpha} Y_k.$$

T^c is positive if $\frac{\bar{Y}_p}{Y_k} > \frac{\gamma}{\beta^c \alpha}$.

But if the ratio of parents' to child's income is low enough, or β^c or α very low, $T^c = 0$. Then, the child still enjoys freely the parental home, but he pays for all his own private expenses and $C_k = Y_k$.

When the child is independent, the parents choose C_p, C_k and H_k (again H_p has been chosen before) by maximizing:

$$\gamma lnC_p + \phi lnH_p + \beta^c[\alpha lnC_k + (1-\alpha)lnH_k]$$

under

$$C_p - \bar{Y}_p + T^i = 0$$

$$C_k + \rho_k H_k - Y_k - T^i = 0$$

$$T^i \geq 0.$$

Again, two cases have to be distinguished.

1. First $T^i > 0$. Then the two BC can be pooled:

$$C_p - \bar{Y}_p + C_k + \rho_k H_k - Y_k = 0$$

   The FOC are:

$$\frac{\gamma}{C_p} = \frac{\beta^i \alpha}{C_k} = \frac{\beta^i(1-\alpha)}{\rho_k H_k}.$$

   From them and the budget constraint we deduce:

$$H_k^i = \frac{\beta^i(1-\alpha)}{\rho_k(\gamma+\beta^i)}(\bar{Y}_p + Y_k)$$

$$C_k^i = \frac{\beta^i \alpha}{\gamma+\beta^i}(\bar{Y}_p + Y_k)$$

   and:

$$T^i = \frac{\beta^i}{\gamma+\beta^i}\bar{Y}_p - \frac{\gamma}{\gamma+\beta^i}Y_k.$$

   This gives the condition for T^i positive: $\frac{\bar{Y}_p}{Y_k} > \frac{\gamma}{\beta^i}$. The higher the parental income or altruism parameter, the less weight the parents put on their consumption, the lower the child's income, the more likely is a monetary transfer to take place.

2. In the second case where the constraint on transfer is binding, $T^i = 0$, the child has to do with his own income, and maximizes $\alpha lnC_k + (1-\alpha)lnH_k$ under $C_k + \rho_k H_k - Y_k = 0$, which gives:

$$H_k^i = \frac{1-\alpha}{\rho_k}Y_k$$

$$C_k^i = \alpha Y_k.$$

There are three possible transfer regimes.

1. If $\frac{\bar{Y_p}}{Y_k} > \frac{\gamma}{\beta^i}$, then $T^i > 0$ and $T^c > 0$.
2. If $\beta^c > \beta^i$ and more precisely $\beta^c > \beta^i/\alpha$, there can be cases where $\frac{\gamma}{\beta^c\alpha} < \frac{\bar{Y_p}}{Y_k} < \frac{\gamma}{\beta^i}$. Hence a the transfer regime characterized by $T^c > 0$ and $T^i = 0$[40].
3. If $\frac{\bar{Y_p}}{Y_k} < \frac{\gamma}{\beta^c\alpha}$, then $\frac{\bar{Y_p}}{Y_k} < \frac{\gamma}{\beta^i}$, hence $T^i = 0$ and $T^c = 0$.

The child has two possible utility levels, V^c under co-residence, and V^i under independence, depending on whether the parents make a financial transfer or not.

$$\begin{array}{l} V^c|_{T^c=0} = \alpha ln\ Y_k + (1-\alpha)\ ln\ \bar{H} + (1-\alpha)\ ln\ n^{\delta-1} \\ V^c|_{T^c>0} = \alpha ln(\bar{Y_p} + Y_k) + (1-\alpha)\ ln\ \bar{H} + (1-\alpha) ln\ n^{\delta-1} + \alpha ln\ \frac{\beta^c\alpha}{\gamma+\beta^c\alpha} \\ V^i|_{T^i=0} = ln\ Y_k + (1-\alpha)\ ln((1-\alpha)/\rho_k) + \alpha ln\ \alpha \\ V^i|_{T^i>0} = \ ln\ (\bar{Y_p} + Y_k) + (1-\alpha)\ ln((1-\alpha)/\rho_k) + \ ln\frac{\beta^i}{\beta^i+\gamma} + \alpha ln\ \alpha \end{array} \tag{3}$$

In each case we compute $V^i - V^c$ by which the child decides whether he leaves or not. Then the partial derivatives of $V^i - V^c$ gives the effect of Y_p, Y_k, n, δ, β, ρ_k and $\bar{H}$ on the probability to leave the nest.

Income effects

1. If the parents are never constrained, $T^c > 0$ and $T^i > 0$:

$$\frac{\partial(V^i - V^c)}{\partial Y_p} = \frac{\partial(V^i - V^c)}{\partial Y_k} = \frac{1-\alpha}{\bar{Y_p} + Y_k} > 0$$

$$\frac{\partial(V^i - V^c)}{\partial \beta^i} = \frac{\gamma}{\beta^i(\beta^i + \gamma)} > 0$$

2. If the parents are not constrained at home, but only when the child has left, $T^c > 0$ and $T^i = 0$:

$$\frac{\partial(V^i - V^c)}{\partial Y_p} = \frac{-\alpha}{\bar{Y_p} + Y_k} < 0.$$

$$\frac{\partial(V^i - V^c)}{\partial Y_k} = \frac{\bar{Y_p} + (1-\alpha)Y_k}{Y_k(\bar{Y_p} + Y_k)} > 0$$

[40] If $\beta^c = \beta^i = \beta$, then regime 2 is not possible and when $\frac{\gamma}{\beta} < \frac{\bar{Y_p}}{Y_k} < \frac{\gamma}{\beta\alpha}$, $T^i > 0$ and $T^c = 0$.

$$\frac{\partial(V^i - V^c)}{\partial \beta^c} = \frac{-(\alpha\gamma)}{\beta^c(\gamma + \beta^c\alpha)} < 0$$

3. If the parents are constrained at home and when the child has left, $T^c = 0$ and $T^i = 0$:

$$\frac{\partial(V^i - V^c)}{\partial Y_p} = 0$$

$$\frac{\partial(V^i - V^c)}{\partial Y_k} = \frac{1-\alpha}{Y_k} > 0$$

Other effects

In all cases,

$$\frac{\partial(V^i - V^c)}{\partial n} = -(\delta - 1)/n < 0$$
$$\frac{\partial(V^i - V^c)}{\partial \delta} = -(1-\alpha) lnn < 0$$
$$\frac{\partial(V^i - V^c)}{\partial \rho_k} < 0$$
$$\frac{\partial(V^i - V^c)}{\partial \bar{H}} = -(1-\alpha)/\bar{H} < 0.$$

Appendix 3: The reduced form econometric specification

Assume the choice of the family are the following:

$$H = h_1 X + h_2 Y_p + e_h \tag{4}$$

$$I^* = a_1 X + a_2 Y_p + a_3 H + a_4 Z + e_i, \tag{5}$$

where H is housing consumption, Y_p the parental income, X and Z vectors of household or child's characteristics, I^* the latent variable governing independence. The e are assumed to be well behaved independent error terms.

Replacing H in Eq. (5):

$$I^* = (a_1 + a_3 h_1) X + (a_2 + \underset{-}{a_3}\,\underset{+}{h_2}) Y_p + a_4 Z + (e_i + a_3 e_h),$$

In a regression of I^* on Y_p, Z and X, ignoring H, the coefficient of Y_p is not the true a_2 but $a_2 + a_3 h_2$. If housing consumption increases with income ($h_2 > 0$) and if independence decreases with housing consumption ($a_3 < 0$), a_2 is reduced. Its positive effect is under estimated and its negative effect is overstated in a model that does not take H into account.

Suppose now that there is an unobserved parents' taste for children's co-residence CT that influences their housing choice $H' = H + CT$. There is no way to separate an exogenous shock on parental housing consumption and their deliberate choice of a house more or less suited to a co-residing adult child. If CT is independent of parental income, Eq. (5) estimation of housing effect incorporates this unobserved taste effect, but a_2 and a_3 are unbiased. If the taste for co-residence CT depends on parental income, for instance $CT = \gamma Y_p$, ignoring it in the estimation of (5) involves a bias. The coefficient of Y_p would be $a_2 + \underset{-}{a_3}\,\gamma$. If $\gamma > 0$ (the richer the parents the more likely they are to have a taste for co-residence), $a_3\gamma$ is negative and the positive effect of parental income is again underestimated, while the negative effect is overstated. But if $\gamma < 0$ (richer parents are less likely to have a taste for co-residence), $a_3\gamma$ is positive and the effect of parental income is overstated if positive and under estimated if negative.

If one is convinced that the taste for an independent child is stronger for richer parents (for instance because they value self assertiveness or because they do not need the child's services), then $a_3\gamma > 0$ and standard altruism is overstated and proximity altruism is under estimated. It is the reverse if poorer parents are those who value independence more, or want to get rid of an extra mouth to feed. The family type

variable, parents' age and nationality, and all housing characteristics in the models are meant to capture the observable part of parental tastes.

The reduced form estimates of the present paper identify the true effect of housing and parental income only if the unobserved parental taste for co-residence is not linked to income. To probe deeper into parental preferences and choices would need other data.

Table A1 **Sample description**

	sample 1		sample 2		sample 3	
	mean	std. deviation	mean	std. deviation	mean	std. deviation
Adult child characteristics						
independent	0.562	0.496	0.260	0.439	0.576	0.494
age	23.481	3.569	21.947	3.169	23.416	3.520
female	0.513	0.500	0.461	0.499	0.485	0.500
Live with partner	0.388	0.487	0.171	0.376	0.359	0.480
Income (1000 € per year)	7.517	8.752	5.462	7.277	7.766	6.337
parental characteristics						
number of persons			3.082	1.323	3.509	1.482
1 other person			0.281	0.449	0.195	0.396
2 other persons			0.338	0.473	0.328	0.469
3 other persons			0.193	0.394	0.244	0.430
4 other persons or more			0.115	0.319	0.190	0.392
apartment			0.283	0.450	0.275	0.447
Number of rooms			5.014	1.473	4.916	1.519
50-100.000 inhabitants			0.068	0.252	0.072	0.259
100-200.000			0.056	0.230	0.058	0.234
> 200.000 inhabitants			0.255	0.436	0.243	0.429
Paris region			0.149	0.356	0.120	0.325
Number of bedrooms/child					1.152	0.775
Step-father					0.089	0.285
Step-mother					0.051	0.221
single mother					0.170	0.376
single father					0.019	0.138
Age of parents					51.715	7.008
immigrant					0.122	0.328
1 sibling					0.355	0.479
2 siblings					0.213	0.409
3 siblings					0.080	0.272
4 siblings or more					0.063	0.242
public sector tenant					0.187	0.390
private sector tenant					0.133	0.340
owner occupier					0.680	0.466
Parental income/Equiv. Adult (1000 € per year)					13.724	10.953
Rent (actual or imputed, 100 €/year)					5.345	1.866
Number of observations	12,272		7,290		12,553	

Table A2 **Model of independence sample 3 (Including total parental housing expenses)**

	parameter estimate	prob>T	parameter estimate	prob>T
Intercept	-0.2582	0.0025	-0.2212	0.000
age	0.0184	0.000	0.0183	0.000
female	0.1935	0.000	0.1950	0.000
income (1000 €)	0.0548	0.000	0.0554	0.000
income squared	-0.0008	0.001	-0.0008	0.000
Step-father	0.1479	0.000	0.1546	0.000
Step-mother	0.2496	0.000	0.2610	0.000
Single mother	0.0450	0.000	0.0502	0.000
Single father	-0.1549	0.000	-0.1450	0.000
age of parent	0.0011	0.084	0.0006	0.345
immigrant	-0.1006	0.000	-0.1120	0.000
Parental income/Eq.Adult	-0,0148	0.000	-0.0154	0.000
Income square 10e-3	0,6994	0.000	0.7224	0.000
Income cubic 10e-3	-0,0106	0.000	-0.0110	0.000
Income 4 10e-6	0,0629	0.000	0.0647	0.000
Income 5 10e-6	-0,0001	0.000	-0.0001	0.000
Private sector tenant	0,0624	0.000		
owner-occupier	0,0373	0.002		
>200.000 inhabitants	-0,0351	0.000		
Paris area	-0,1151	0.000		
apartment	0,0348	0.000		
bedrooms/child	-0,0407	0.000		
Housing expenses	-0.0064	0.019	-0.0180	0.000
1 sibling	0.0153	0.165	0.0486	0.000
2 siblings	0.0334	0.015	0.0778	0.000
3 siblings	0.0967	0.000	0.1440	0.000
4 siblings or more	0.0952	0.000	0.1452	0.000
R^2	0.4613		0.4550	
Number of observations	12,553		12,553	
Number of families	7,612		7,612	

Linear probability model of being independent. Standard error corrected for cluster observations
Housing expenses are computed from hedonic models as explained in Appendix 1

Fig A1 Three testing strategies from the French Housing survey

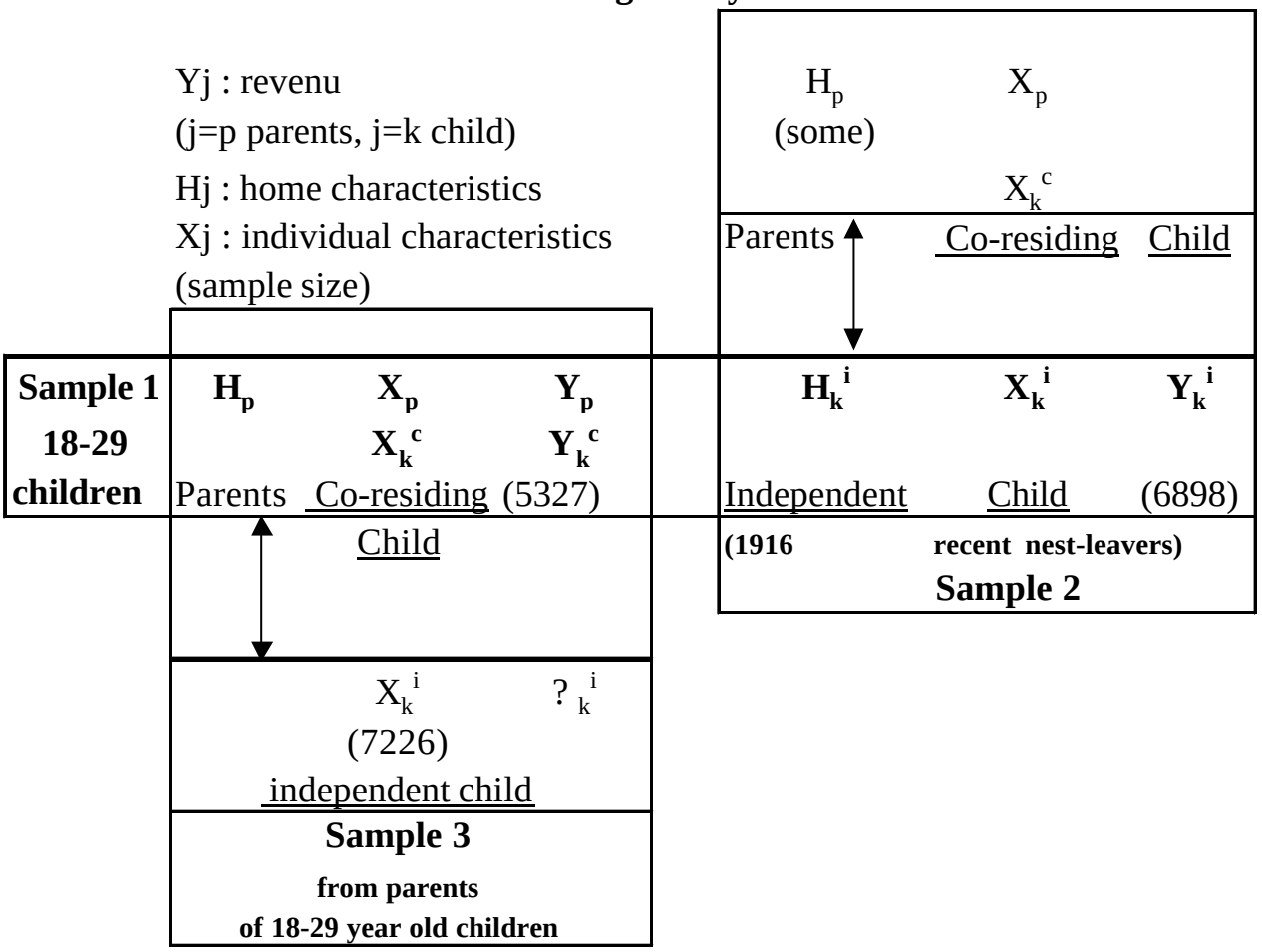


Figure A2. Rate of independent living by age

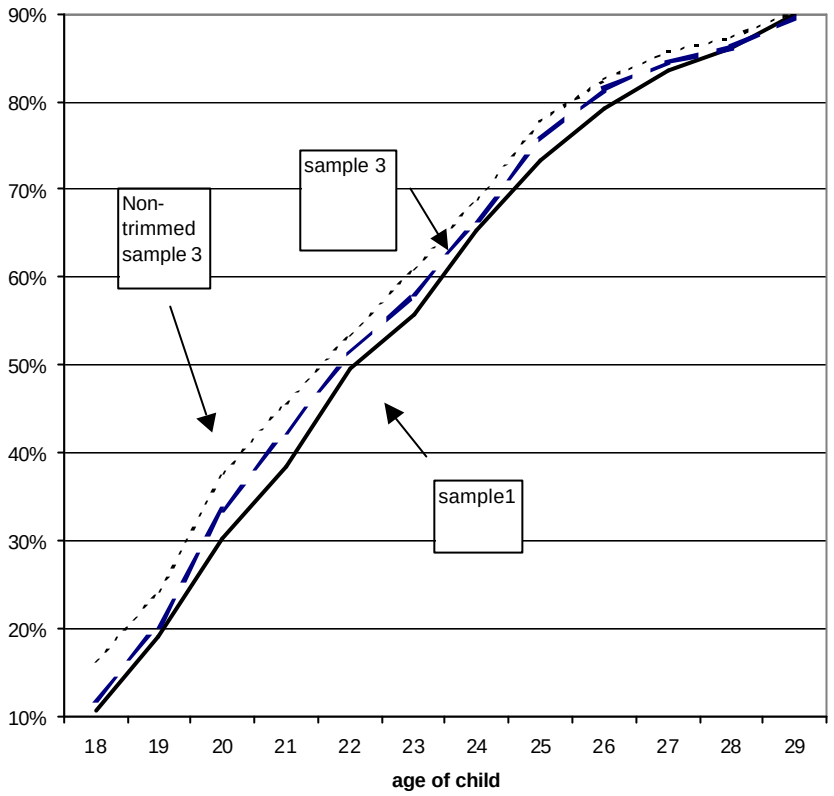


Fig. 1. Simulated theoretical effect of parental income (Vi-Vc, Yk=2, H=0,3*Yp)

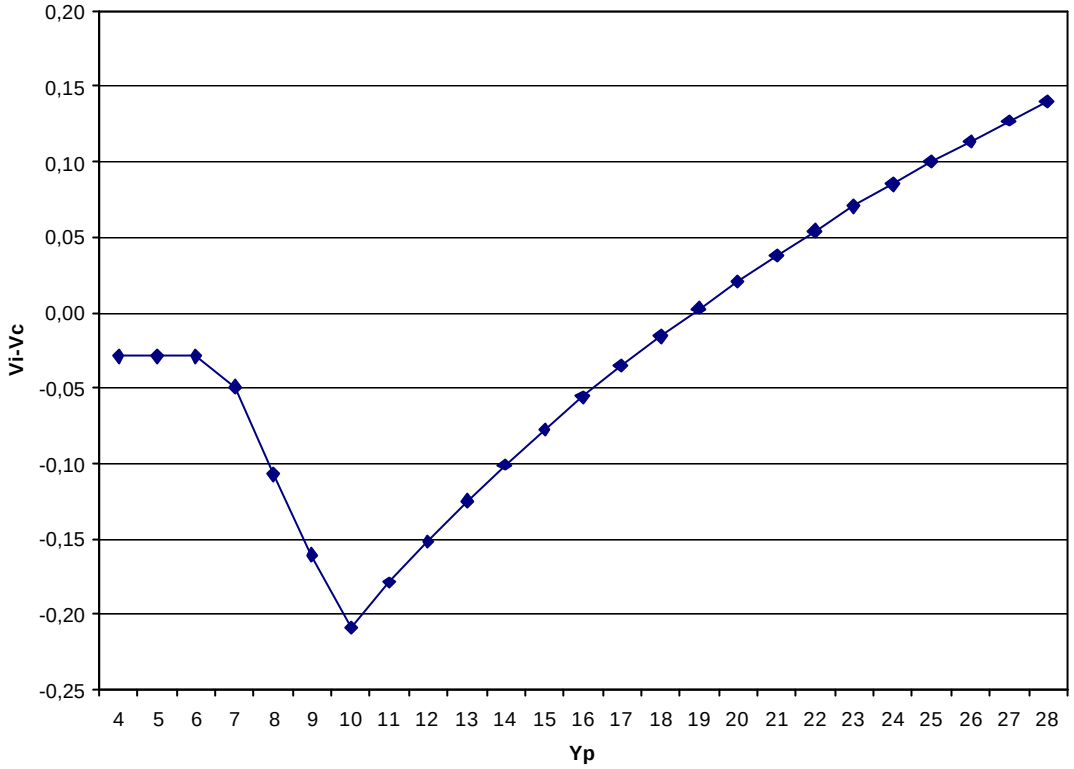


Fig. 2. Estimated independence rate by parental income (all children)

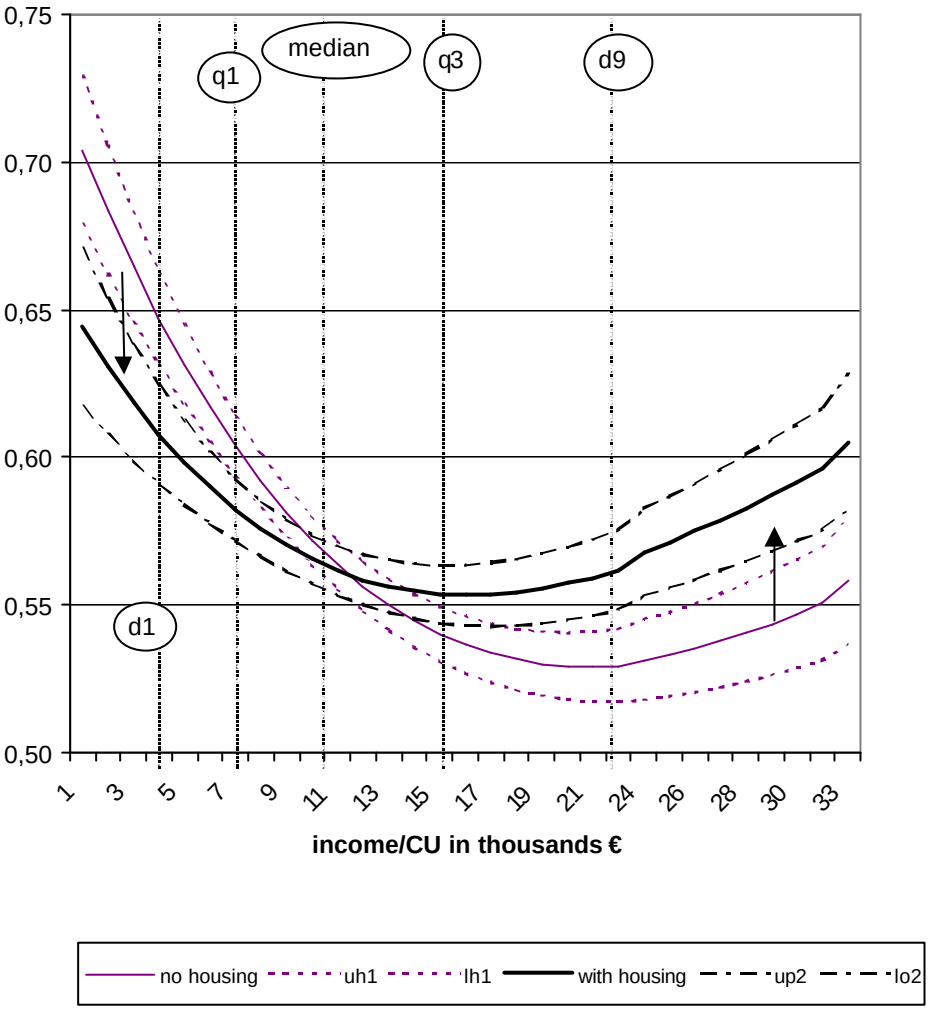
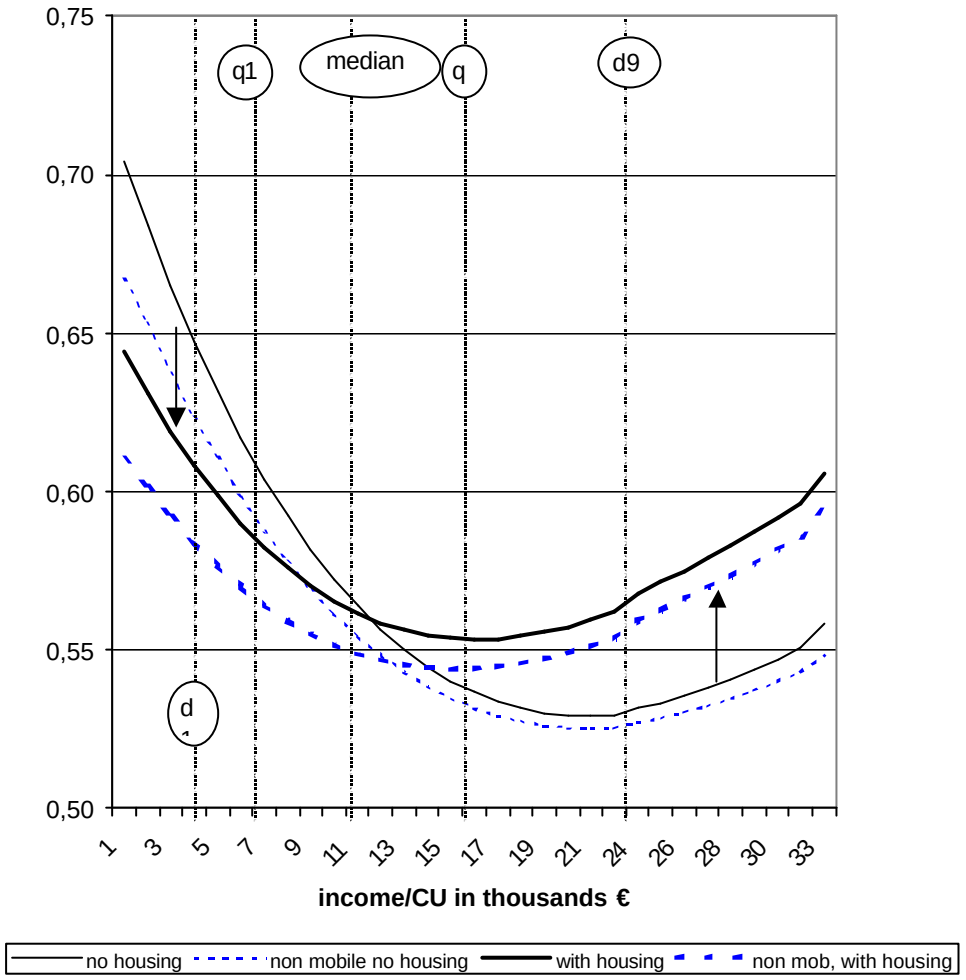


Fig. 3. Estimated independence rate by parental income (all children and those of non mobile parents)



The estimated independence rates are computed from table 3 (model 3) and the confidence intervals from the variance covariance matrix of the parameters. Various quantiles of parental income by equivalent consumption unit (in 1000 €) are also shown: in bold the quantiles on the sample of children with 2 parents or a step parent, in light-faced the quantiles for children with a single parent.

Fig. 4. Estimated independence rate by parental income and family type (all children)

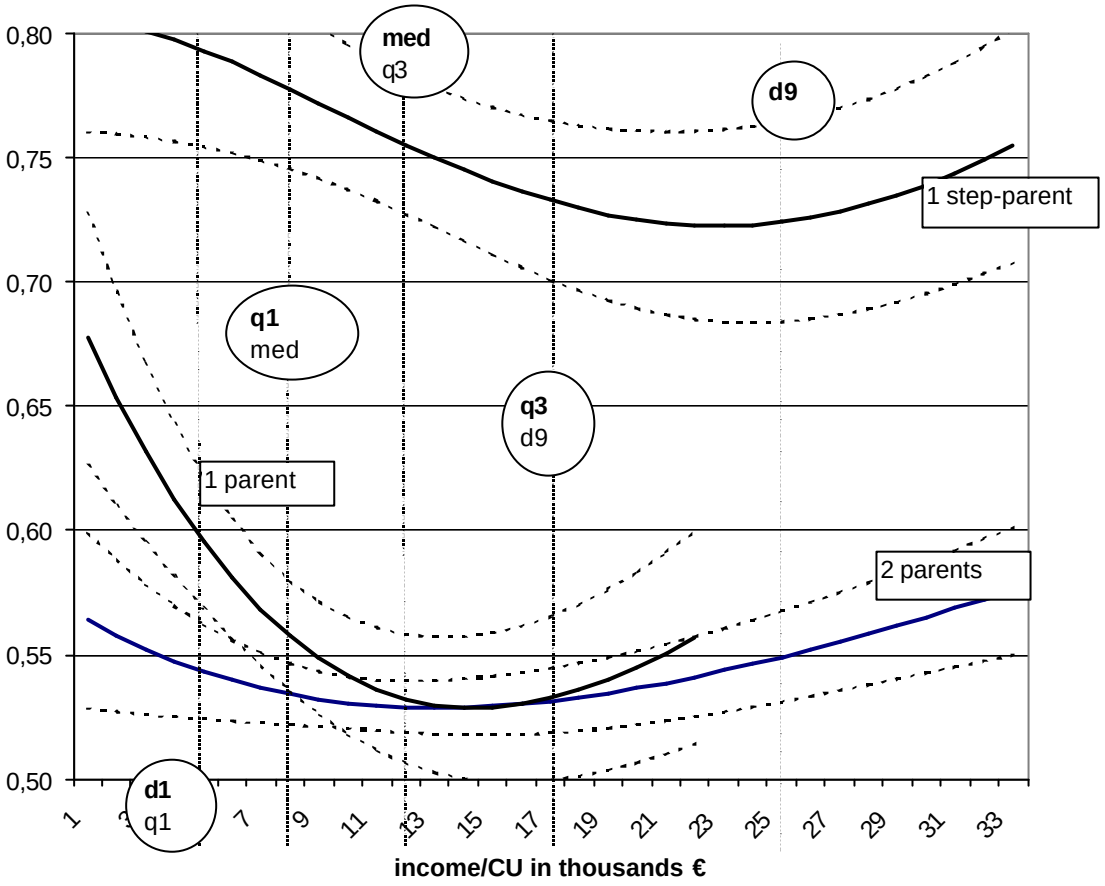


Fig. 5a. Estimated independence rate by parental income
(18-22 children with two parents)

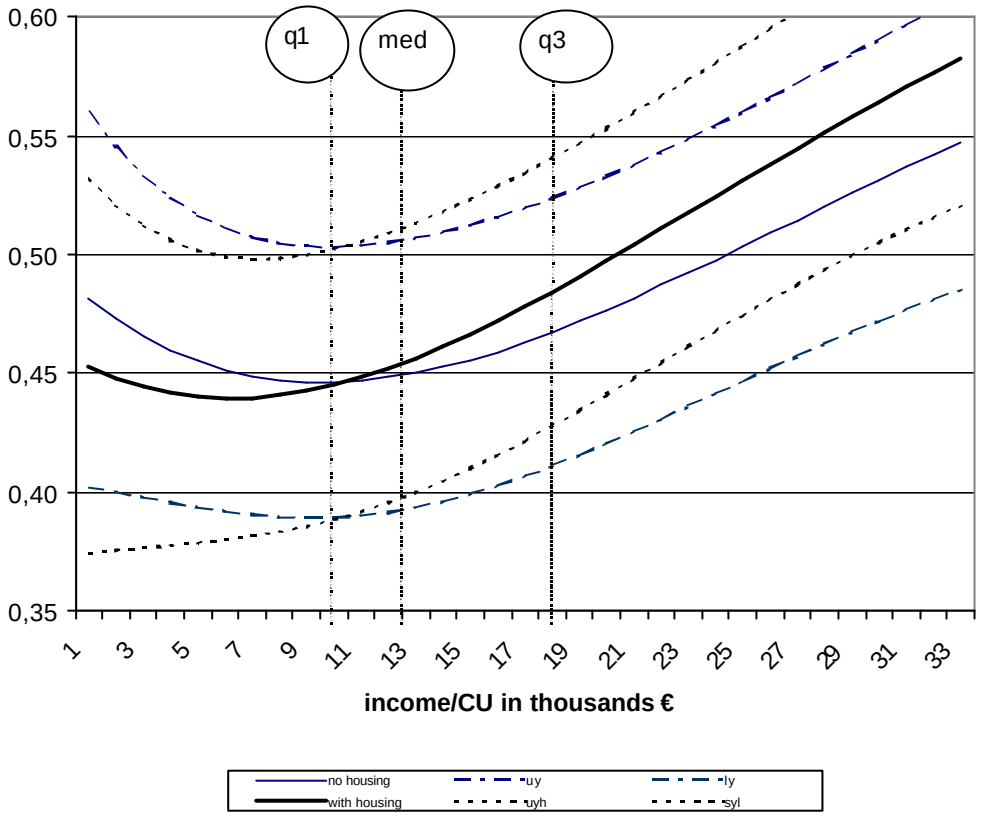


Fig. 5b. Estimated independence rate by parental income
(23-25 children with two parents)

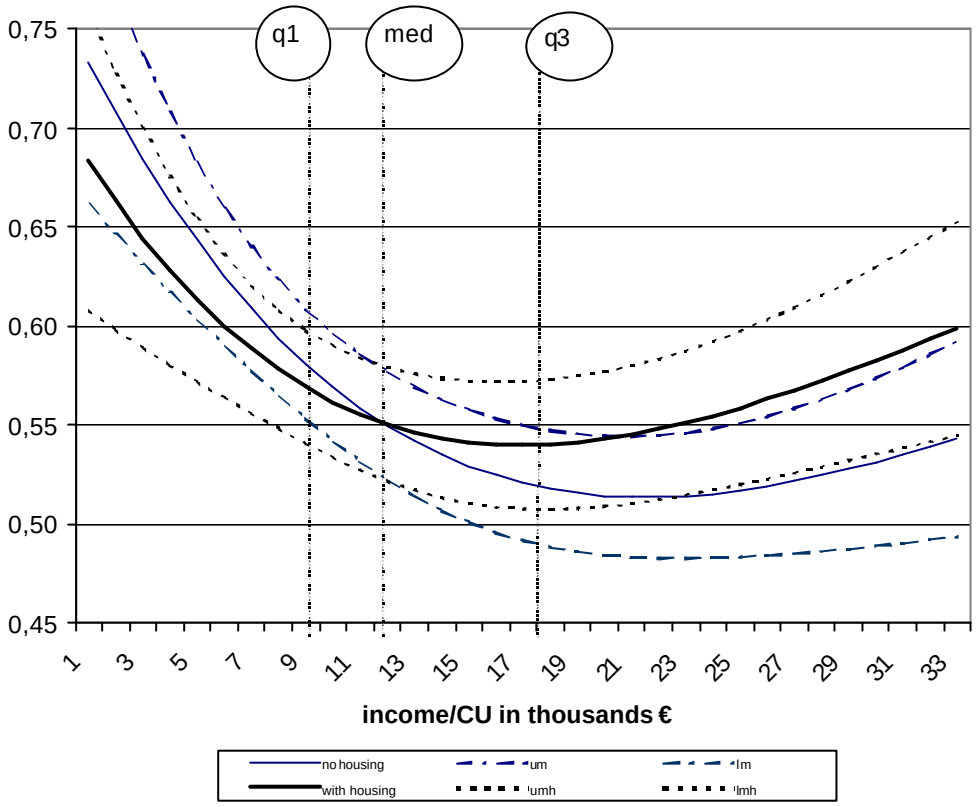


Fig. 5c. Estimated independence rate by parental income
(26-29 children with two parents)

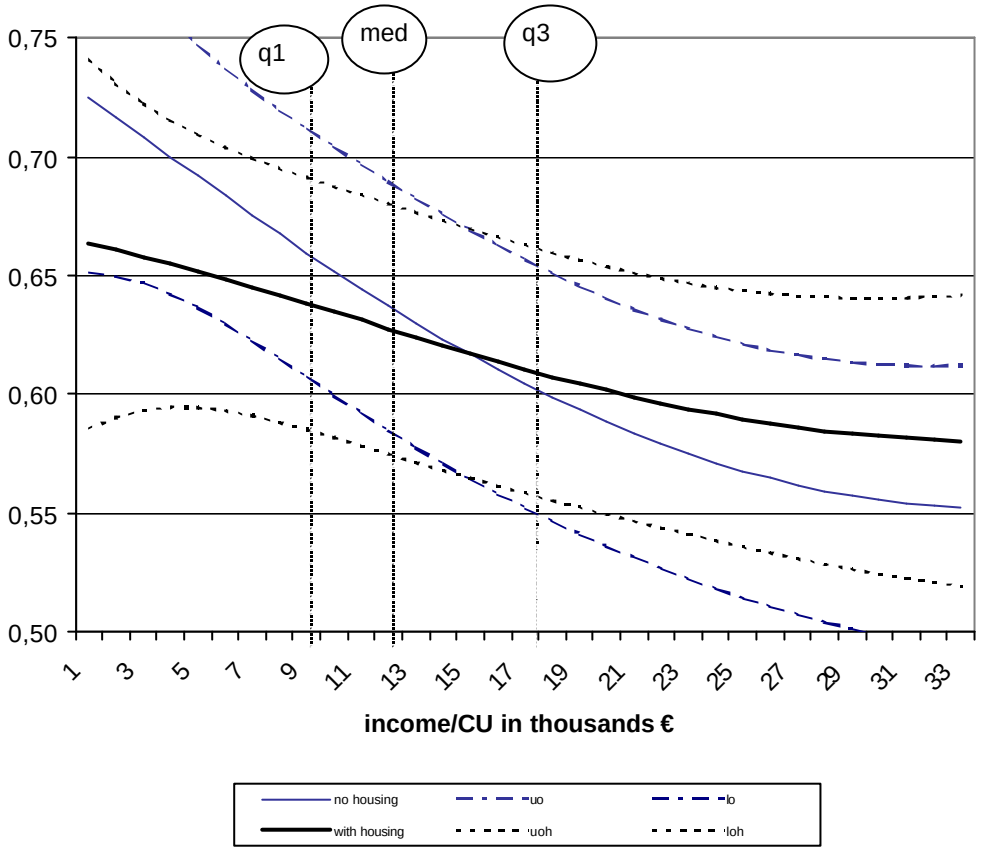


Table 2. Model of independence: (child's and family type variables)

	Sample 1		Sample 3 All parents				Sample 3 non mobiles parents	
					Fixed-effect		Fixed-effect	
Variable	Coef.	Pr > |t|	Coef.	Pr > |t|	Coef.	P>|z|	Coef.	P>|z|
Intercept	-0.3084	0.000	-0.3504	0.000	-0.4030	0.000	-0.4030	0.000
Age	0.0186	0.000	0.0189	0.000	0.0241	0.000	0.0273	0.000
Female	0.1980	0.000	0.1960	0.000	0.1950	0.000	0.1969	0.000
Income (1000 €)	0.0569	0.000	0.0560	0.000	0.0470	0.000	0.0481	0.000
Income squared	-0.0009	0.001	-0.0009	0.001	-0.0007	0.000	-0.0006	0.000
Step-father			0.1885	0.000	0.1092	0.007	0.0793	0.083
Step-mother			0.2962	0.000	0.1958	0.000	0.1869	0.000
Single mother			0.0698	0.000				
Single father			-0.1499	0.000				
Two parents			Ref.					
R^2	0.4081		0.4378		0.4032		0.4130	
Number of observations	12 553		12 553		8754		6830	
Nb of families	7 612		7 612		3813		2982	

NB : Dependent variable = 1 if the child lives independently, = 0 if he co-resides with the parents.
With sample 3 the standard errors take into account the fact that some children may belong to the same family.
In the fixed-effect models (using only families with at least two 18-29 children) the reference family type is two-parents or a single parent.

Table 3 Model of independence (parents and child's variables)

	Model 1		Model 2		Model 3 (interacting with family type)					
	coef.	prob>T	coef.	prob>T	coef.	prob>T	coef.	prob>T	coef.	prob>T
					Two parents		Step-parent		Lone Parent	
Intercept	-0.1297	0.003	-0.2679	0.000	-0.4392	0.000				
age	0.0191	0.000	0.0186	0.000	0.0237	0.000	-0.0024	0.573	0.0146	0.0408
female	0.1971	0.000	0.1934	0.000	0.1918	0.000	0.1864	0.000	0.1719	0.000
income (1000 €)	0.0557	0.000	0.0548	0.000	0.0531	0.000	0.0994	0.000	0.0855	0.000
income squared	-0.0008	0.001	-0.0008	0.001	-0.0007	0.000	-0.0036	0.000	-0.0027	0.000
step-father	0.1688	0.000	0.1470	0.000			0.7434	0.000		
step-mother	0.2844	0.000	0.2480	0.000			0.8451	0.000		
single mother	0.0368	0.0003	0.0444	0.000					0.1826	0.105
single father	-0.1548	0.000	-0.1555	0.000					0.0127	0.913
Parents' characteristics										
age	-0.0011	0.079	0.0011	0.089	0.0004	0.636	0.0023	0.059	0.0040	0.002
immigrant	-0.0974	0.000	-0.1005	0.000	-0.0842	0.000	-0.0488	0.139	-0.1055	0.000
ypuc (income 1000€)	-0.0232	0.000	-0.0153	0.000	-0.0073	0.017			-0.0281	0.000
ypuc2*10e-3	0.8877	0.000	0.6982	0.000	0.3800	0.003	-0.6729	0.007	1,3900	0.000
ypuc3*10e-3	-0.0125	0.000	-0.0105	0.000	-0.0058	0.005	0.0319	0.012	-0.0207	0.000
ypuc4*10e-6	0.0714	0.000	0.0615	0.000	0.0341	0.006	-0.4594	0.027	0.0928	0.000
ypuc5*10e-6	-0.0001	0.000	-0.0001	0.000	-0.0001	0.007	0.0021	0.058		
Parental housing characteristics										
Private sector tenant			0.0597	0.000	0.0692	0.001	0.0084	0.793	0.0598	0.004
Owner-occupier			0.0334	0.006	0.0402	0.015	0.0109	0.705	0.0369	0.085
U.U. > 200.000 inhab.			-0.0395	0.000	-0.0425	0.000	-0.0152	0.457	-0.0286	0.102
Paris Region			-0.1301	0.000	-0.1340	0.000	-0.0708	0.015	-0.1041	0.000
appartment			0.0338	0.001	0.0230	0.100	0.0198	0.409	0.0484	0.011
Bedroom/child			-0.0464	0.000	-0.0256	0.001	-0.1019	0.000	-0.0945	0.000
0 sibling			Ref.		Ref.		Ref.		Ref.	
1 sibling			0.0084	0.430	0.0163	0.211	-0.0600	0.049	0.0287	0.182
2 siblings			0.0225	0.081	0.0303	0.064	-0.0242	0.429	0.0445	0.098
3 siblings			0.0844	0.000	0.1030	0.000	-0.0070	0.844	0.0768	0.030
4 or more siblings			0.0807	0.000	0.0903	0.002	-0.0150	0.695	0.1186	0.007
Nb of observations (nb of families)	12 553 (7612)		12 553 (7612)		12 553 (7612)					
R^2	0.4468		0.4610		0.4798					

NB : Sample 3. Dependent variable = 1 if the child lives independently, = 0 if he co-resides with the parents. Standard errors take into account the fact that some children may belong to the same family. Ypuc2 is squared parental income (in thousand euros per equivalent consumption unit), ypuc3 is the cubic term, etc.

Table 4 Model of independence (parents and child's variables, non mobile parents only)

	Model 1		Model 2		Model 3 (interacting with family type)					
	coef.	prob>T	coef.	prob>T	coef.	prob>T	coef.	prob>T	coef.	prob>T
					Two parents		Step-parent		Lone Parent	
Intercept	-0.2757	0.000	-0.4052	0.000	-0.4948	0.000				
age	0.0226	0.000	0.0224	0.000	0.0250	0.000	-0.0002	0.961	0.0228	0.000
female	0.2012	0.000	0.1977	0.000	0.1985	0.000	0.1723	0.000	0.1732	0.000
income (1000 €)	0.0532	0.000	0.0525	0.000	0.0519	0.000	0.1076	0.000	0.0784	0.000
income suared	-0.0008	0.000	-0.0008	0.000	-0.0007	0.000	-0.0040	0.000	-0.0025	0.000
step-father	0.1474	0.000	0.1355	0.000			0.6555	0.000		
step-mother	0.2659	0.000	0.2414	0.000			0.7520	0.000		
single mother	0.0082	0.506	0.0284	0.028					0.0301	0.823
single father	-0.1841	0.000	-0.1768	0.000					-0.1585	0.250
Parents' characteristics										
age	-0.0005	0.469	0.0015	0.044	0.0005	0.577	0.0029	0.047	0.0048	0.002
immigrant	-0.0744	0.000	-0.0715	0.000	-0.0610	0.000	-0.0213	0.591	-0.0861	0.006
ypuc (income 1000€)	-0.0183	0.000	-0.0116	0.000	-0.0057	0.090			-31,7600	0.000
ypuc2*10e-3	0.7014	0.000	0.5566	0.000	0.3096	0.034	-0.2969	0.359	1,6100	0.000
ypuc3*10e-3	-0.0098	0.000	-0.0084	0.000	-0.0047	0.043	0.0145	0.370	-0.0249	0.000
ypuc4*10e-6	0.0554	0.000	0.0493	0.000	0.0276	0.048	-0.1808	0.489	0.1130	0.000
ypuc5*10e-6	-0.0001	0.000	-0.0001	0.000	-0.0001	0.049	0.0006	0.647		
Parental housing characteristics										
Private sector tenant			0.0274	0.129	0.0505	0.036	-0.0415	0.334	0.0066	0.834
Owner-occupier			0.0153	0.284	0.0270	0.150	-0.0116	0.722	0.0201	0.442
U.U. > 200.000 inhab.			-0.0453	0.000	-0.0441	0.000	-0.0351	0.153	-0.0251	0.274
Paris Region			-0.1321	0.000	-0.1384	0.000	-0.0792	0.036	-0.0717	0.030
appartment			0.0164	0.189	0.0152	0.341	-0.0088	0.788	0.0249	0.301
Bedroom/child			-0.0324	0.000	-0.0162	0.059	-0.0838	0.000	-0.0707	0.000
0 sibling			Ref.		Ref.		Ref.		Ref.	
1 sibling			0.0111	0.361	0.0211	0.138	-0.0462	0.194	0.0093	0.733
2 siblings			0.0383	0.010	0.0485	0.006	0.0042	0.902	0.0477	0.178
3 siblings			0.0877	0.000	0.1015	0.000	0.0129	0.755	0.0620	0.159
4 or more siblings			0.0664	0.009	0.0846	0.012	-0.0197	0.692	0.0601	0.311
nb of observations	9 784		9784		9 784					
(nb of families)	(5936)		(5936)		(5936)					
R^2	0.4493		0.4605		0.4719					

NB : Sample 3. Dependent variable = 1 if the child lives independently, = 0 if he co-resides with the parents. Standard errors take into account the fact that some children may belong to the same family. Ypuc2 is squared parental income (in thousand euros per equivalent consumption unit), ypuc3 is the cubic term, etc.

Table 5 **Models of child independence**
Comparison of sample 3 with sample 2

	sample 2		sample 3	
Variable	Coeff.	Pr > |t|	Coeff.	Pr > |t|
Intercept	-0.2109	0.0003	-0,0643	0,1295
age	0.0187	<.0001	0,0196	<,0001
female	0.1421	<.0001	0,1994	<,0001
income	0.0291	<.0001	0,0562	<,0001
income square	-0.0002	<.0001	-0,0009	<,0001
Parental home characteristics				
1 sibling	0.0413	0.0309	0,0407	0,0243
2 siblings	0.0784	<.0001	0,0484	0,0063
3 siblings	0.0863	<.0001	0,0799	<,0001
4 siblings	0.1054	<.0001	0,1496	<,0001
50-100,000 inhabitants	0.0508	0.0065	0,0081	0,5471
100-200,000 inhabitants	0.0426	0.0373	0,0024	0,8743
> 200,000 inhabitants	0.0220	0.0565	-0,0381	<,0001
Paris region	-0.0646	<.0001	-0,1433	<,0001
apartment	0.0058	0.6351	0,0119	0,1870
Number of rooms	-0.0869	<.0001	-0,0929	<,0001
Number of rooms square	0.0081	<.0001	0,0079	<,0001
Nb observations	7,342		12,553	
R^2	0.2267		0.4279	

Dependent variable=1 if child lives independently,
=0 if child co-resides with parents

Table 6 **Estimated probability of independence**

panel 1		**all children**	**2 parents**	**step-parent**	**one parent**
	no	yes	yes	yes	yes
baseline q2	**56.1**	**56.0**	**52.9**	**70.3**	**54.4**
(standard error)	**(0.4)**	**(0.4)**	**(0.5)**	**(1.1)**	**(1.1)**
diff. to baseline					
d1	7.7	*4.2*	*1.2*	3.5	*7.5*
q1	3.9	*1.9*	*0.5*	2.2	*3.9*
q3	-2.6	*-0.7*	*0.4*	-2.4	*-2.6*
d9	-2.7	*1.1*	*2.2*	-3.5	*-2.5*
bedroom/child div. by 2		*2.5*	*1.5*	*5.9*	*5.4*
UU>100.000 inhabitants		*-1.4*	*-1.6*	*-0.3*	*-0.9*
paris region		*-10.5*	*-10.8*	-5.9	*-8.5*
rest of France		*2.7*	*2.6*	*1.2*	*1.9*
% standard altruism	7	12	15	0	10
% proximity altruism	75	50	20	70	75

panel 2	**2 parents**					
		18-22		**23-25**		**26-29**
	no	yes	no	yes	no	yes
référence q2	**44.9**	**45.4**	**54.6**	**54.9**	**63.4**	**62.6**
(standard error)	**(2.9)**	**(2.9)**	**(1.4)**	**(1.5)**	**(2.7)**	**(2.7)**
diff. to baseline						
d1	0.4	-1.4	8.7	5.7	5.3	2.4
q1	-0.2	-1.3	4.3	2.6	3.1	1.4
q3	1.8	3	-2.9	-0.9	-3.6	-1.9
d9	5.6	8.1	-2.8	1.2	-6.8	-3.8
bedroom/child div. by 2		0.1		2.0		2.4
UU>100.000 inhabitants		-3		-1.3		0.2
Paris region		-10.6		-15.8		-6.1
rest of France		3.1		3.5		1.1
% standard altruism	45	66	10	20	0	0
% proximity altruism	15	<5	75	60	92	86

Estimated from models 2 or 3 of table 3, or a similar model on two-parents children.
Baseline: median parental income of the category, other characteristics at sample means (means of the age class in panel 2).
No: no housing control, yes: with housing control. Standard altruism (proximity altruism): proportion of children for which an increase in parental income of 1 000 € , raises the probability to be independent by more than 0.25 point.